

SCOLECODONTS FROM THE CHARLESTOWN  
MAIN LIMESTONE, LOWER CARBONIFEROUS,  
AT CULTS, FIFESHIRE, SCOTLAND

E. R. ELLER

Curator of Geology and Invertebrate Fossils  
Carnegie Museum

MUS. COMP. ZOOL.  
LIBRARY

JUN 14 1967

HARVARD  
UNIVERSITY

Hinde (1879) figured four annelid jaws (scolecodonts) collected in the limestone quarries at Cults, Fifeshire. A strata dip of five degrees to the south made the overburden at the quarries too thick for surface quarrying, and underground mining has taken the place of surface operations. Rock specimens were collected from material brought to the surface from about a half-mile to the south of the mine entrance. The Charlestown Main Limestone is grey in color, about 12 feet thick, and except for the lower part, about 98 per cent  $\text{CaCO}_3$ . It consists of fossil invertebrate debris including sponge spicules, chitinous fragments, and possible carbonaceous matter. For more detailed information see "The Limestones of Scotland" (Geological Survey of Great Britain, 1944, 1956, vols. 35, 37).

Of the four annelid jaws figured by Hinde only one is complete enough to warrant description. Three of the specimens, which have no relationship to each other, were described as *Eunicites affinis*. In this paper one form is placed questionably in the genus *Nereidavus* and the other two are listed as genus and species indeterminate.

Considerable material from the limestone mine at Cults was treated with hydrochloric acid but only three complete jaws were found in the residues. All other specimens were so fragmentary that they could not be used. A surprising amount of the rock material collected turned out to be shaly and the acid had little effect on it. There is no question that additional specimens could be found if more material were treated.

The author wishes to acknowledge the assistance of the Graphic Arts Technical Foundation, Pittsburgh, Pa., for reproducing the illustrations for this article as part of their research on Continuous Tone Printing.

Genus *Arabellites* Hinde, 1879*Arabellites inusitatus*, new species

## Maxilla I, Figures 1, 2

It is possible that this unusual looking specimen may be slightly crushed and out of natural alignment. The jaw is small, narrow, and subtriangular in outline. Nine conical, sharp-pointed denticles, two of which are missing, extend to about the mid-point on the inner margin. The first two denticles are large and are directed forward. A smaller, backward-directed tooth seems to be attached as part of the second denticle. The fourth tooth is long and sharp-pointed while the fifth is small and slightly blunt. Denticles six and seven are missing. The remaining two denticles are small, short, and hooked backwards. The irregularly curved inner and outer margins terminate in sharp-pointed spurs. A narrow, oval-shaped fossa occupies the posterior area between the spurs. The margins of the fossa are slightly thickened. The surface of the jaw is irregularly convex and concave.

This species is similar to *Arabellites comis* Eller (1938, 1964) especially in the posterior area. Both forms bear the spur-like appendages. The irregular arrangement of the first three denticles is unusual. However, several forms, *Nereidavus ineptus* Eller (1942), *Nereidavus alatus* Eller (1945), and *Lumbriconereites crueatus* Eller (1961), have the first two or three denticles arranged like those of *Arabellites inusitatus*.

Genus *Staurocephalites* Hinde, 1879*Staurocephalites cultensis*, new species

## Maxilla II, Figures 3, 4

The jaw is elongate and wide. Because of the broken outer margin the true width cannot be determined. A series of twelve large triangular-shaped, sharp-pointed, backward-directed denticles extends nearly to the posterior end. The denticles increase in size from the first to the third and then decrease gradually in size posteriorly. The first denticle is narrow and much smaller than the second tooth. The anterior end of the jaw is pointed, while the posterior is truncate. The outer margins are irregular and broken. A narrow fossa extends the full length of the jaw. The surfaces of the jaw are irregularly concave and convex.

While *Staurocephalites cultensis* is similar in a general way to a number of species of the genus, it does not resemble any form closely.

Genus *Leodicites* Eller, 1940*Leodicites monstratus*, new species

## Maxilla II, Figures 5, 6, 7

The jaw is small, wide, and subrectangular in shape. Along the curved inner margin a series of 10 blunt, large, triangular denticles extends nearly to the posterior extremity. The first denticle is large and conspicuous and is directed slightly backward. It is followed by a smaller blunt tooth. The remaining denticles are backward-directed and decrease gradually in size posteriorly. From the curved anterior end the nearly straight outer margin extends to a point about opposite the fifth denticle to form a sharp-pointed shank. A shallow, crescent-shaped bight emphasizes the acuteness of the shank. The fossa is deep, fairly wide, and extends about two-thirds the length of the jaw. A thickened margin with well rounded edges is present around the fossa. Both the upper and lower surfaces of the jaw are convex.

*Leodicites monstratus* resembles *Leodicites similis* (Hinde, 1879) and *Eunicites cristatus* Hinde (Hinde, 1882). Stauffer (1933, 1939) described two forms, *Arabellites contritus* and *Arabellites falciformes*, that have a slight resemblance to *Leodicites monstratus*. *Leodicites variedentatus* Eller (1940) and *Leodicites buris* Eller (1945) seem to correspond to *Leodicites monstratus* in some of their details.

*Leodicites scoticus* (Hinde)

## Maxilla II, Figure 8

*Arabellites scoticus* Hinde, 1879: pl. 20, fig. 24.

Except for the rendering of the denticles the illustration of the jaw is similar to the specimen. The true form of the second and third teeth is uncertain because of the concealing matrix, and because they may be crushed. There is evidence of denticles along the posterior end of the inner margin. A fossa is probably present on the other side of the jaw.

Genus *Nereidavus* Grinnell, 1877? *Nereidavus* sp.

## Maxilla I, Figure 11

*Eunicites affinis* Hinde, 1879: 376, pl. 20, fig. 22.

Part of the jaw is missing but there is enough preserved to suggest that it might belong to the genus *Nereidavus*.

Genus and Species Indeterminate  
Maxilla? II, III, Figures 9, 10

*Eunicites affinis* Hinde, 1879: 376, pl. 20, figs. 21, 23.

These two specimens are fragments of the jaws and cannot be identified generically and specifically. They do not have any characteristics common to each other.

REFERENCES CITED

- ELLER, E. R.  
 1938. Scolecodonts from the Potter Farm Formation of the Devonian of Michigan. *Ann. Carnegie Mus.*, 27: 275-286, pl. XXVIII, XXIX.  
 1940. New Silurian scolecodonts from the Albion Beds of the Niagara Gorge, New York. *Ann. Carnegie Mus.*, 28: 9-46, pls. I-VII.  
 1942. Scolecodonts from the Erindale, Upper Ordovician, at Streetsville, Ontario. *Ann. Carnegie Mus.*, 29: 241-270.  
 1945. Scolecodonts from the Trenton Series (Ordovician) of Ontario, Quebec, and New York. *Ann. Carnegie Mus.*, 30: 119-212.  
 1961. Scolecodonts from well samples of the Dundee, Devonian of Michigan. *Ann. Carnegie Mus.*, 36: 29-48.  
 1964. Scolecodonts of the Delaware Limestone, Devonian of Ohio and Ontario. *Ann. Carnegie Mus.*, 36: 229-275.
- GRINNELL, G. B.  
 1877. Notice of a new genus of annelids from the Lower Silurian. *Am. Jour. Sci.*, 3d. ser., 14: 229.
- HINDE, A. J.  
 1879. On annelid jaws from the Cambro-Silurian, Silurian, and Devonian Formations in Canada and from the Lower Carboniferous in Scotland. *Quart. Jour. Geol. Soc. London*, 35: 370-383.  
 1882. On annelid remains from the Silurian Strata of the Isle of Gotland. *Bihang till kongl. Svenska Vetenskaps-Akademiens Handlingar*, 7: 1-28.
- STAUFFER, C. R.  
 1933. Middle Ordovician Polychaeta from Minnesota. *Bull. Geol. Soc. America*, 44: 1173-1218.  
 1939. Middle Devonian Polychaeta from the Lake Erie district. *Jour. Paleont.*, 13: 500-511.

▶

Figs. 1, 2. *Arabellites inusitatus*, new species, Maxilla I (29507). Figs. 3, 4, *Staurocephalites cultensis*, new species, Maxilla II (29508). Figs. 5, 6, 7. *Leodicites monstratus*, new species, Maxilla II (29509). Fig. 8. *Leodicites scoticus* (Hinde), Maxilla II. Fig. 11. *?Nereidavus* sp. Maxilla I. Figs. 9, 10. Genus and Species Indeterminate, Maxilla ? II, III. Numbers in parentheses indicate Carnegie Museum catalog number of the respective type specimens. Figs. 1-7 enlarged about 80 times. Figs. 8-11 enlarged about one-half from Hinde's illustrations (1879: plate xx, figs. 21-24).



1



2



3



4



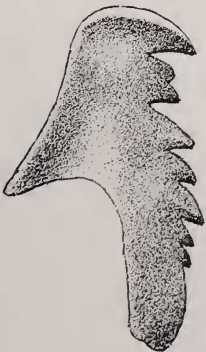
5



6



7



8



9



10



11